

What is claimed is:

1. A method for transmitting information to or from a programmable logic device-based system ("PLD system") over a packet-based network using a protocol, comprising the steps of:

5 sending at least a first packet from a computing system to the PLD system over the network;

in the PLD system, extracting first information from the first packet;

in response to the first information, sending at least a second packet from the PLD system to the computing system over the network, wherein the second packet contains information  
10 identifying the PLD system and also information indicative of one or more commands in accordance with the protocol, wherein the PLD system operates in accordance with the one or more commands;

in response to the second packet, exchanging one or more third packets between the computing system and the PLD system over the network, wherein the one or more third packets  
15 comprise one or more commands in accordance with the protocol, wherein second information extracted from the one or more third packets is exchanged between the computing system and the PLD system.

2. The method of claim 1, wherein the second information comprises information selected from the group consisting of: configuration information; bar code data; information  
20 indicative of a weight of one or more objects or material; information indicative of temperature; information indicative of movement or position; information indicative of a size of one or more objects or material; information indicative of a presence or amount of light; information indicative of pressure; information indicative of friction; information indicative of elevation; information indicative of thickness; information indicative of reflectivity; information indicative  
25 of wind; information indicative of a degree of moisture content; camera or other image data; information indicative of color or other optical characteristics of an object or material; information indicative of success or failure of an operation; information derived from a magnetic card reader; information indicative of pitch or other sound characteristics; information indicative of a smell characteristics; information indicative of a texture characteristic; and information  
30 indicative of a status condition of an industrial process.

3. The method of claim 1, wherein the PLD system includes non-volatile memory for storage of data, wherein the non-volatile memory comprises Flash memory, electrically erasable and programmable read only memory or battery-backed-up random access memory.

4. The method of claim 1, wherein a plurality of third packets are received by the PLD system, wherein, after receiving each of the third packets, the PLD system sends at least a fourth packet to the computing system over the network, wherein the fourth packets each acknowledge receipt of a corresponding one of the third packets.

5. The method of claim 4, wherein after receiving each of the third packets, the PLD system saves second data from the third packets in non-volatile memory of the system.

6. The method of claim 5, wherein the PLD system saves the second data in the non-volatile memory of the system from each of the third packets prior to sending each of the fourth packets.

7. The method of claim 5, wherein, after receipt by the computing system of a fourth packet that acknowledges receipt by the PLD system of a final third packet, the computing system sends at least a fifth packet to the PLD system, wherein, in response to the fifth packet, the PLD system saves one or more data indicating that all of the second data has been received and stored in the non-volatile memory.

8. The method of claim 1, wherein the second data is loaded into the PLD system in response to a user command from a user.

9. The method of claim 8, wherein the user command comprises a command input by a switch.

10. The method of claim 9, wherein the switch comprises a physical switch on the PLD system.

11. The method of claim 8, wherein the user command comprises a command entered via the computing system.

12. The method of claim 1, wherein one or more display devices provide visual feedback of the status of the PLD system.

13. The method of claim 12, wherein the one or more display devices comprise one or more LEDs.

14. The method of claim 12, wherein the one or more display devices comprise a liquid crystal display.

15. The method of claim 1, wherein the PLD system provides audio feedback indicative of the status of the PLD system.

16. The method of claim 12, wherein at least one LED indicates that the step of loading the second data into the PLD system is in process.

5 17. The method of claim 1, wherein the PLD system processes packets sent from the computing system.

18. The method of claim 1, wherein the PLD system extracts commands in accordance with the protocol from the packets sent from the computing system.

10 19. The method of claim 1, wherein the second packet includes a version identifier for the PLD system.

20. The method of claim 1, wherein the second packet contains information that identifies a plurality of commands in accordance with the protocol to which the PLD system responds.

15 21. The method of claim 1, wherein the second packet contains information that is indicative of a location coupled to the network, wherein the location contains information that identifies a plurality of commands in accordance with the protocol to which the PLD system responds.

22. The method of claim 21, wherein the location comprises storage coupled to the computing system.

20 23. The method of claim 21, wherein the location comprises storage on a second network, wherein the computing system accesses the storage via the second network.

24. The method of claim 23, wherein the information that is indicative of the location comprises an address of a node on the second network.

25 25. The method of claim 23, wherein the second network comprises an Internet network.

26. The method of claim 25, wherein the information that is indicative of the location comprises a URL.

30 27. The method of claim 1, wherein the plurality of commands include one or more first commands to which the PLD system responds and also include one or more second commands to which the PLD system responds.

28. The method of claim 27, wherein the first commands comprise core commands to which at least a second system containing a second PLD system also responds.

29. The method of claim 28, wherein the second commands comprise custom commands to which the second PLD system does not respond.

30. The method of claim 1, wherein the network comprises a local area network.

31. The method of claim 1, wherein the network comprises an Ethernet-based network.

32. The method of claim 1, wherein at least certain of the first, second or third packets comprise UDP packets.

33. The method of claim 1, wherein at least certain of the first, second or third packets comprise TCP packets.

34. The method of claim 1, wherein at least certain of the first, second or third packets comprise Ethernet packets.

35. The method of claim 1, wherein at least certain of the first, second or third packets comprise link layer packets.

36. The method of claim 1, wherein at least certain of the first, second or third packets comprise network layer packets.

37. The method of claim 1, wherein at least certain of the first, second or third packets comprise IP packets.

38. The method of claim 1, wherein at least certain of the first, second or third packets comprise transport layer packets.

39. The method of claim 1, wherein at least certain of the first, second or third packets comprise IPX packets.

40. The method of claim 1, wherein at least certain of the packets sent by the computing system comprises broadcast packets having a predetermined address that are directed to a first predetermined port.

41. The method of claim 1, wherein at least certain of the packets sent by the PLD system comprise packets having a predetermined source address that are directed to a second predetermined port.

42. The method of claim 1, wherein the PLD system does not implement a TCP/IP stack.

43. The method of claim 1, wherein the PLD system comprises an FPGA.

44. The method of claim 1, wherein the PLD system comprises a device selected from the group consisting of a PDA, a mobile telephone, a portable computer, a game system, a household appliance, a video recording system and a paging device.

5 45. The method of claim 1, wherein the information identifying the one or more commands in accordance with the protocol to which the PLD system responds comprises XML code.

10 46. The method of claim 1, wherein the PLD system includes a first logic unit that processes packets sent by the computing system, wherein the first logic unit identifies one or more commands in the packets sent by the computing system.

47. The method of claim 1, wherein the PLD system includes one or more second logic units coupled to the first logic unit that carries out one or more operations that correspond to the one or more commands.

15 48. The method of claim 47, wherein the PLD system includes one or more third logic units, wherein the third logic units carry out one or more logic operations that correspond to packets that the PLD system transmits to the computing system.

20 49. The method of claim 1, wherein the PLD system includes first and second logic portions, wherein a first logic portion operates to communicate packets in accordance with the protocol with the computing system, wherein the second logic portion operates to carry out a process that does not comprise communicating packets in accordance with the protocol with the computing system.

50. The method of claim 1, wherein the computing system operates in response to software that is transmitted to the computing system from the PLD system.

25 51. The method of claim 1, wherein the computing system operates in response to software that is stored in a location identified by a packet from the PLD system.

52. The method of claim 51, wherein the location comprises a storage location on a second network coupled to the computing system.

53. The method of claim 52, wherein the location is identified by a network address or URL.

30 54. The method of claim 51, wherein the location is determined from an identifier for the PLD system.